Listing of Claims:

Claim 1-15. (canceled).

Claim 16. (currently amended): A method for synchronizing a base station with a mobile station, the method comprising the steps of:

forming a signal sequence K(i) ~~to be emitted by~~at the base station, wherein the signal sequence K(i) is formed using the following rule using modulated repetition of a partial signal sequence "a" consisting of 16 elements:

K = <a, a, a, -a, -a, a, -a, -a, a, a, a, -a, a, -a, a, a>,

and wherein the signal sequence is further formed in accordance with the following relationship wherein a second partial signal sequence K2(k) of length n2=16 is repeated n1=16 times and is modulated in the process with a first partial signal sequence K1(j) of length n1=16, modulation of the second partial signal sequence K2(k) can be obtained using the following rule:

K(i) = K2(i mod n2) * K1(i div n2), for i =0 ...n1*n2-1; ~~and~~

forming at least one of the partial signal sequences, being a Golay sequence $X_n(k)$ of length nx=n1=16, using the following relationship:

$$X_0(k) = \delta(k)$$
$$X'_0(k) = \delta(k)$$
$$X_n(k) = X_{n-1}(k) + W_n \cdot X'_{n-1}(k-D_n)$$
$$X'_n(k) = X_{n-1}(k) - Wn \cdot X'_{n-1}(k - D_n),$$
$$k = 0, 1, 2, \ldots, 2^{NX-1}$$
$$n=1, 2, \ldots, NX$$
$$D_n = 2^{P_n}$$

where

$nx=16=2^{NX}$

$NX=4$

$\delta(k)$: Kronecker delta function,

and wherein the permutation P_1, P_2, P_3, P_4 and unit variable W_1, W_2, W_3, W_4 can be used to form a partial signal sequence from the following set of permutation/unit variable pairs ($P_1, P_2, P_3, P_4, W_1, W_2, W_3, W_4$;):

3201, +1-1+1+1; 3201, -1-1+1+1; 3201, +1-1-1+1; 3201, -1-1-1+1; 3201, +1-1+1-1; 3201, -1-1+1-1; 3201, +1-1-1-1; 3201, -1-1-1-1; 1023, +1+1-1+1; 1023, -1+1-1+1; 1023, +1-1-1+1; 1023, -1-1-1+1; 1023, +1+1-1-1; 1023, -1+1-1-1; 1023, +1-1-1-1; 1023, -1-1-1-1; and

transmitting the signal sequence K(i) from the base station to set up a synchronization with a mobile station.

Claim 17. (canceled) : A method for synchronizing a base station with a mobile station as claimed in claim 16, wherein the signal sequence K(i) is formed using the following formation law by modulated repetition of a partial signal sequence "a" consisting of 16 elements:

$$K = \langle a, a, a, -a, -a, a, -a, -a, a, a, a, -a, a, -a, a, a \rangle$$

Claim 18. (previously presented): A method for synchronizing a base station with a mobile stations as claimed in claim 16, wherein the partial signal sequence K1(j) is a Golay sequence which is defined by the delay matrix D = [8,4,1,2] and the weight matrix W = [1,-1, 1,1].

Claim 19. (previously presented): A method for synchronizing a base station with a mobile station as claimed in claim 16, wherein the permutation P_1, P_2, P_3, P_4 and unit variable W_1, W_2, W_3, W_4 used to form the first partial signal sequence is taken from the following set of permutation/unit variable pairs ($P_1, P_2, P_3, P_4, W_1, W_2, W_3, W_4$):

3201, +1-1+1+1; 3201, -1-1-1+1; 3201, -1-1+1-1; 3201, +1-1-1-1; and

the permutation P_1, P_2, P_3, P_4 used to form the second partial signal sequence is equal to 3201.

Claim 20. (previously presented): A method for synchronizing a base station with a mobile station as claimed in claim 16, wherein the signal sequence K(i) is received by the mobile station as part of a received signal sequence and further processed for synchronization purposes.

Claim 21. (previously presented): A method for synchronizing a base station with a mobile station as claimed in claim 16, wherein the signal sequence K(i) is determined by the mobile station, knowledge of the first and second partial signal sequences K1(j) K2(k) being used in the mobile station.

Claim 22. (previously presented): A method for synchronizing a base station with a mobile station as claimed in claim 16, the method further comprising the steps of:

determining correlation sums of the signal sequence K(i) with corresponding sections of the received signal sequence in the mobile station;

calculating a partial correlation sum sequence of the partial signal sequence K2(k) with corresponding parts of the received signal sequence; and

selecting n1 elements of the partial correlation sum sequence to calculate a correlation sum and multiplying the nl elements by the partial signal sequence K1(j) to produce a scalar product.

Claim 23. (previously presented): A method for synchronizing a base station with a mobile station as claimed in claim 22, wherein nl in each case n2-th elements of the partial correlation sum sequence are selected to calculate a correlation sum.

Claim 24. (previously presented): A method for synchronizing a base station with a mobile station as claimed in claim 16, the method further comprising the steps of:

determining correlation sums of the signal sequence K(i) with corresponding sections of the received signal sequence in the mobile station;

calculating a partial correlation sum sequence of the partial signal sequence K2(k) with corresponding elements of the received signal sequence; and

multiplying n2 elements of the partial correlation sum sequence by the partial signal sequence K2(k) to produce a scalar product in order to calculate a correlation sum.

Claim 25. (previously presented): A method for synchronizing a base station with a mobile station as claimed in claim 24, wherein nl in each case n2-th elements of the received signal sequence E(l) are selected to calculate a partial correlation sum.

Claim 26. (previously presented): A method for synchronizing a base station with a mobile station as claimed in claim 22, wherein calculated partial correlation sums are stored and used to calculate a further correlation sum.

Claim 27. (previously presented): A method for synchronizing a base station with a mobile station as claimed in claim 16, wherein an efficient Golay correlator is used in the mobile station in order to determine, at least partially, the signal sequence and to calculate at least one correlation sum.

Claim 28. (canceled).

Claim 29. (currently amended): A base station comprising:

a part for storing or forming a signal sequence K(i) formed using the following formation rule using modulated repetition of a partial signal sequence "a" consisting of 16 elements:

K = <a, a, a, -a, -a, a, -a, -a, a, a, a, -a, a, -a, a, a>,

and wherein the signal sequence is formed in accordance with the following relationship wherein a partial second signal sequence K2(k) of length n2=16 is repeated n1=16 times and is modulated in the process by the first partial signal sequence K1(j) of length nl=16, the modulation of the second partial signal sequence K2(k) can be obtained using the following rule:

K(i) = K2(i mod n2) * K1(i div n2), for i =0 ... nl*n2-1,

at least one of the partial signal sequences being a Golay sequence ~~X,, (k)~~Xn(k) of length nx=nl=16 which can be formed using the following relationship

$$X_0(k) = \delta(k)$$

$$X'_0(k) = \delta(k)$$
$$X_n(k) = X_{n-1}(k) + W_n \bullet X'_{n-1}(k-D_n)$$
$$X'_n(k) = X_{n-1}(k) - Wn \bullet X'_{n-1}(k - D_n),$$
$$k = 0, 1, 2, \ldots, 2^{NX-1}$$
$$n=1, 2, \ldots, NX$$
$$D_n = 2^{Pn}$$

where

$nx=16=2^{NX}$

$NX=4$

δ (k): Kronecker delta function,

the permutation P_1, P_2, P_3, P_4 and unit variable W_1, W_2, W_3, W_4 can be used to form a partial signal sequence being taken from the following set of permutation/unit variable pairs ($P_1, P_2, P_3, P_4, W_1, W_2, W_3, W_4$;):

3201, +1-1+1+1; 3201, -1-1+1+1; 3201, +1-1-1+1; 3201, -1-1-1+1; 3201, +1-1+1-1; 3201, -1-1+1-1; 3201, +1-1-1-1; 3201, -1-1-1-1; 1023, +1+1-1+1; 1023, -1+1-1+1; 1023, +1-1-1+1; 1023, -1-1-1+1; 1023, +1+1-1-1; 1023, -1+1-1-1; 1023, +1-1-1-1; 1023, -1-1-1-1; and

parts for emitting the signal sequence K(i) with the aim of synchronization with a receiving unit.

Claim 30. (currently amended): A mobile station comprising a part for determining a signal sequence K(i) formed using the following formation rule using modulated repetition of a partial signal sequence "a" consisting of 16 elements:

K = <a, a, a, -a, -a, a, -a, -a, a, a, a, -a, a, -a, a, a>,

and wherein the signal sequence is formed in accordance with the following relationship wherein a second partial signal sequence K2(k) of length n2=16 is repeated nl=16 times and is modulated in the process with a first partial signal sequence Kl(j) of length n1=16, the modulation of the second partial signal sequence K2(k) can be obtained using the following rule:

K(i) = K2(i mod n2) * K1(i div n2), for i =0 ... nl *n2-1,

at least one of the partial signal sequences being a Golay sequence $X_n(k)$ of length nx=nl=16, which can be formed using the following relationship:

$$X_0(k) = \delta(k)$$

$$X'_0(k) = \delta(k)$$

$$X_n(k) = X_{n-1}(k) + W_n \cdot X'_{n-1}(k-D_n)$$

$$X'_n(k) = X_{n-1}(k) - Wn \cdot X'_{n-1}(k - D_n).$$

$$k = 0, 1, 2, \ldots, 2^{NX-1}$$

$$n=1, 2, \ldots, NX$$

$$D_n = 2^{Pn}$$

where

nx=16=2^{NX}

NX=4

δ (k): Kronecker delta function,

the permutation P_1, P_2, P_3, P_4 and unit variable W_1, W_2, W_3, W_4 can be used to form a partial signal sequence being taken from the following set of permutation/unit variable pairs ($P_1, P_2, P_3, P_4, W_1, W_2, W_3, W_4$;):

3201, +1-1+1+1; 3201, -1-1+1+1; 3201, +1-1-1+1; 3201, -1-1-1+1; 3201, +1-1+1-1; 3201, -1-1+1-1; 3201, +1-1-1-1; 3201, -1-1-1-1; 1023, +1+1-1+1; 1023, -1+1-1+1; 1023, +1-1-1+1; 1023, -1-1-1+1; 1023, +1+1-1-1; 1023, -1+1-1-1; 1023, +1-1-1-1; 1023, -1-1-1-1;

and knowledge of the first and second partial signal sequences K1(j) K2(k) being used;

and

a processor for processing the signal sequence K(i) for synchronization with a base station.